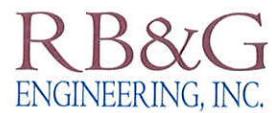


January 2, 2008



Horrocks Engineers
One West Main
American Fork, UT 84003

Re: Layton Interchange
Preliminary Embankment Settlement

Gentlemen:

In accordance with your request, we have performed a preliminary evaluation of the probable range of settlement which will occur due to placement of the proposed new embankment fill for the Layton Interchange at Main Street and 750 South in Layton, Utah.

We have assumed a maximum embankment height of 32 feet with a width of 120 feet and vertical walls on each side. Embankment fill was assumed to have an average total unit weight of 140pcf.

A soil data sheet for Structure No. D-718 (existing South Layton Interchange bridge at Main Street) was provided by UDOT's Geotechnical Division. A copy of the soil data sheet is included herewith. Structure No. D-718 is located within approximately 500 to 800 feet of the area of interest for the settlement evaluation. At the D-718 site, the upper 11 to 13 feet appear to consist predominantly of loose sand and gravel. The sand and gravel zone was underlain by an 11 foot thick layer of silt and silty clay, followed by medium dense to very dense sand and gravel with some thin clay and silt layers to the bottom of the borings at a depth of about 60 feet. Groundwater is shown at a depth of between 3 and 4.5 feet below the ground surface at the time the borings were completed (summer of 1962).

We have also reviewed a soil data sheet for the Gentile Street bridge over I-15 (Structure C-483). A copy of this sheet is also attached. At this location, the near surface cohesive deposits averaged about 20 feet thick. The boring depths at Gentile Street ranged from 52 to 100 feet and were similar to the Main Street borings, in that cohesive soils were seldom encountered below a depth of about 25 feet. In our preliminary settlement evaluations, we assumed the cohesive soil layer will average 11 feet thick in the area of interest. Additional estimates were also developed assuming an average layer thickness of 20 feet.

The cohesive layer was characterized as A-4 and A-6 material, with an average moisture content of about 30%. The coefficient of consolidation (C_c) in this layer was assumed to be 0.20 based

on correlations with an assumed liquid limit of about 30. A coefficient of recompression (C_r) of 0.03 was also assumed for this layer. The average void ratio (e_0) was assumed to be 0.8.

Based on our experience with cohesive soils at similar depths along the I-15 corridor in Salt Lake, Davis, and Weber Counties, we anticipate that the over-consolidation ratio of this material will be in the order of 2 to 3, on average. Evaluations of consolidation settlement are particularly sensitive to this parameter, which must be determined from laboratory testing of samples obtained from the site. To demonstrate the sensitivity of settlement estimates to the assumed over-consolidation ratio, evaluations were performed using assumed ratios of both 2 and 3.

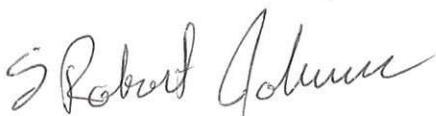
Settlement estimates for the assumed embankment section are tabulated and plotted on the attached figure. It will be noted that the estimates vary considerable, depending upon the assumed parameters. The appropriate parameters will have to be determined based on site-specific subsurface investigations and laboratory testing. It will be noted, however, that the range of estimated settlements is less significant at locations 20 feet or more outside the fill footprint (offset of 80 feet or greater on the attached figure). Because the clay layer shown on available boring logs is relatively shallow, large settlements outside the embankment footprint are not anticipated. Site specific investigations for the new interchange may encounter deep cohesive layers not shown on the old soil data sheets, which could change the estimated settlements significantly.

We have noted that the boring logs for Structure D-718 indicate the presence of loose saturated granular deposits in the upper 11 to 13 feet of the soil profile. These soils could be susceptible to liquefaction and lateral spread, and may have to be replaced or improved in bridge foundation areas to meet UDOT geotechnical requirements for the design seismic event.

We appreciate the opportunity of providing this preliminary evaluation. If there are any questions regarding the information contained herein, please call.

Sincerely,

RB&G ENGINEERING, INC.



S. Robert Johnson, P.E.
bep/jal



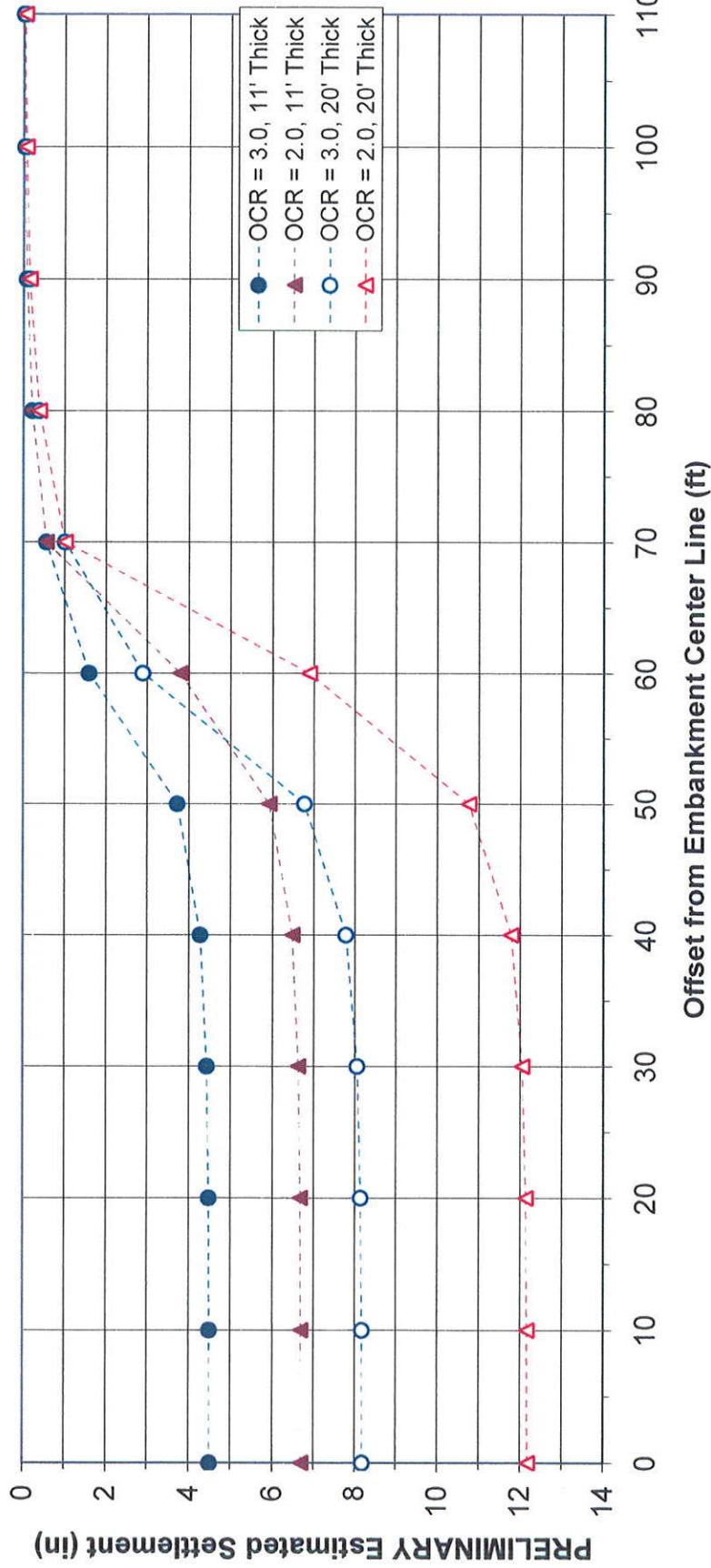
Bradford E. Price, P.E.

Layton - Improvements at Main Street and 750 South
 for Horrocks Engineers

PRELIMINARY estimated settlements through typical embankment section.

Clay Parameters		Offset (ft) from CL of Embankment 32' high and 120' wide with vertical walls both sides (walls at ~60' offset)											
OCR	Layer Thickness	0	10	20	30	40	50	60	70	80	90	100	110
3.0	11 ft	4.5	4.5	4.4	4.3	3.7	1.6	0.6	0.2	0.1	0.0	0.0	0.0
2.0	11 ft	6.7	6.7	6.7	6.6	6.5	5.9	3.8	0.6	0.2	0.1	0.0	0.0
3.0	20 ft	8.2	8.2	8.1	8.1	7.8	6.8	2.9	1.0	0.4	0.2	0.1	0.0
2.0	20 ft	12.2	12.2	12.1	12.1	11.8	10.8	6.9	1.0	0.4	0.2	0.1	0.0

Note: Estimates do not include Secondary Consolidation, which could exceed 1 inch at CL, but will likely be very minor outside embankment footprint.



KEY TO PORKIN LOGS	VERITY-LOGS - LESS THAN 2 INCHES APART FROM LOOSE - 4 TO 10 INCHES APART. MEDIUM - 10 TO 20 INCHES APART. DENSE - 20 TO 30 INCHES APART. VERY-DENSE - 30 INCHES APART. NARROW - 30 INCHES APART.
ADDITIONAL INFORMATION	CONSISTENT(TAB) VERITY-LOGS - LESS THAN 2 INCHES APART FROM MEDIUM - 10 TO 20 INCHES APART. DENSE - 20 TO 30 INCHES APART. VERY-DENSE - 30 INCHES APART. NARROW - 30 INCHES APART.

CLAY	CLAY	CLAY

NO. 817237 MOLES

ELEVATIONS DEPTHS SP. GRAVITY

STUFF ADDITION PLASTIC
AMERICAN SUGAR CO.
A-8 (2), 100% SUGAR

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TUB.T. 146537 U.S. 3232
SAMPLE W.H.O.

SPUT-BEAMED
UNIVERSITY
OF TORONTO

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CLASSIFICATION

U.S. GOVERNMENT PRINTING OFFICE: 1917. 10-1250

ABBREVIATIONS

REAGAN—BUSH CAMPAIGN
PEN-PAL ACTION

BUREAU OF THE BUDGET

STATE DEPARTMENT OF HIGHWAYS

STRUCTURES DIVISION
AYTON TO HILL FIELD INTERCHANGE
SO LAYTON INTERCHANGE

15-7484 (1954) 49-2

DAVIS

B-718-
2 ~20

Boring #1

Depth (ft)	Description	Geological Unit
0-100	Soil	C-100
100-200	Bedrock	C-200
200-300	Soil	C-300
300-400	Bedrock	C-400
400-500	Soil	C-500
500-600	Bedrock	C-600
600-700	Soil	C-700
700-800	Bedrock	C-800
800-900	Soil	C-900
900-1000	Bedrock	C-1000

Boring #2

Depth (ft)	Description	Geological Unit
0-100	Soil	C-100
100-200	Bedrock	C-200
200-300	Soil	C-300
300-400	Bedrock	C-400
400-500	Soil	C-500
500-600	Bedrock	C-600
600-700	Soil	C-700
700-800	Bedrock	C-800
800-900	Soil	C-900
900-1000	Bedrock	C-1000

Boring #3

Depth (ft)	Description	Geological Unit
0-100	Soil	C-100
100-200	Bedrock	C-200
200-300	Soil	C-300
300-400	Bedrock	C-400
400-500	Soil	C-500
500-600	Bedrock	C-600
600-700	Soil	C-700
700-800	Bedrock	C-800
800-900	Soil	C-900
900-1000	Bedrock	C-1000

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